T06T60'29/55660

図1

Title: SPEECH ANALYSIS METHOD AND SPEECH SYNTHESIS SYSTEM
Inventor: TAKAHIRO KAMAI
Atty. Ref. No.: 5077-000066

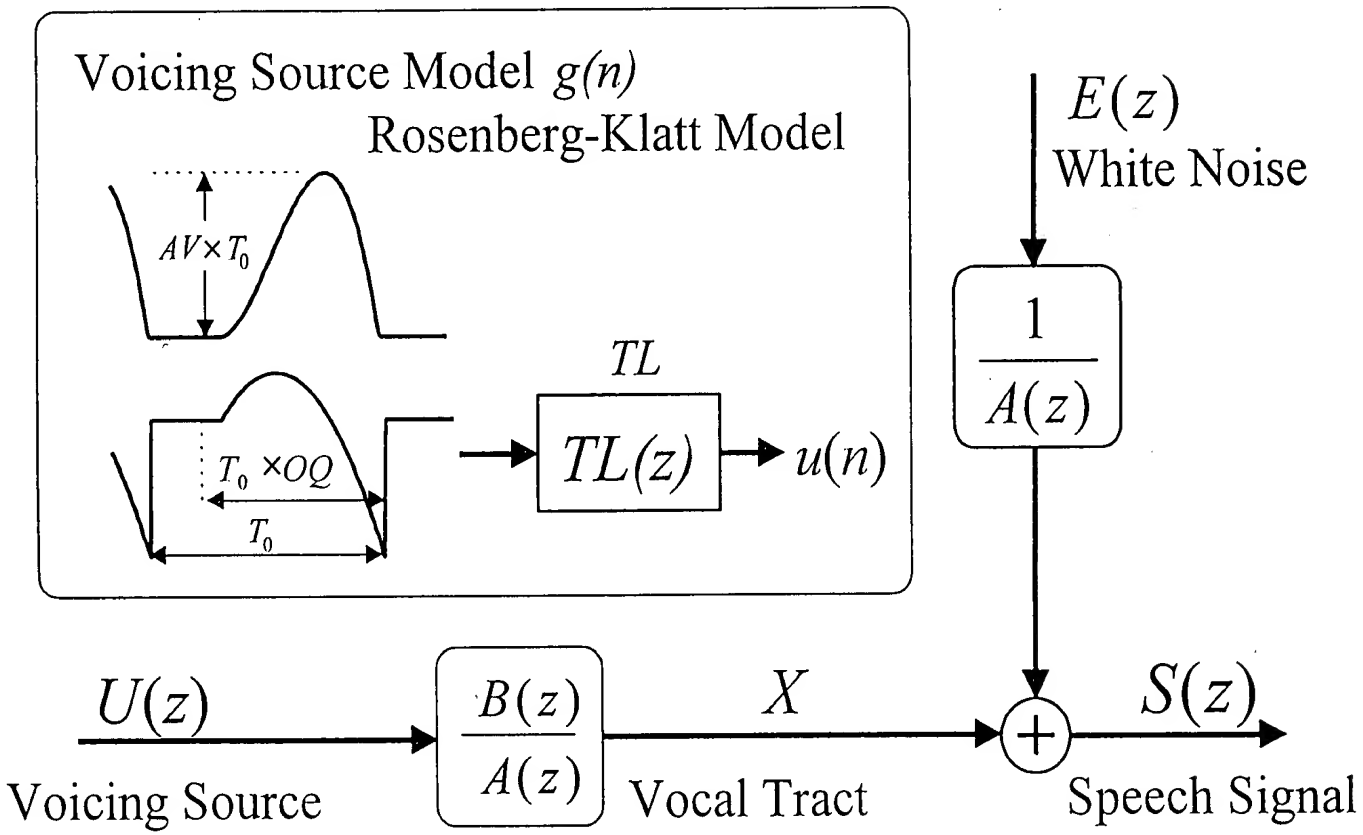

図2

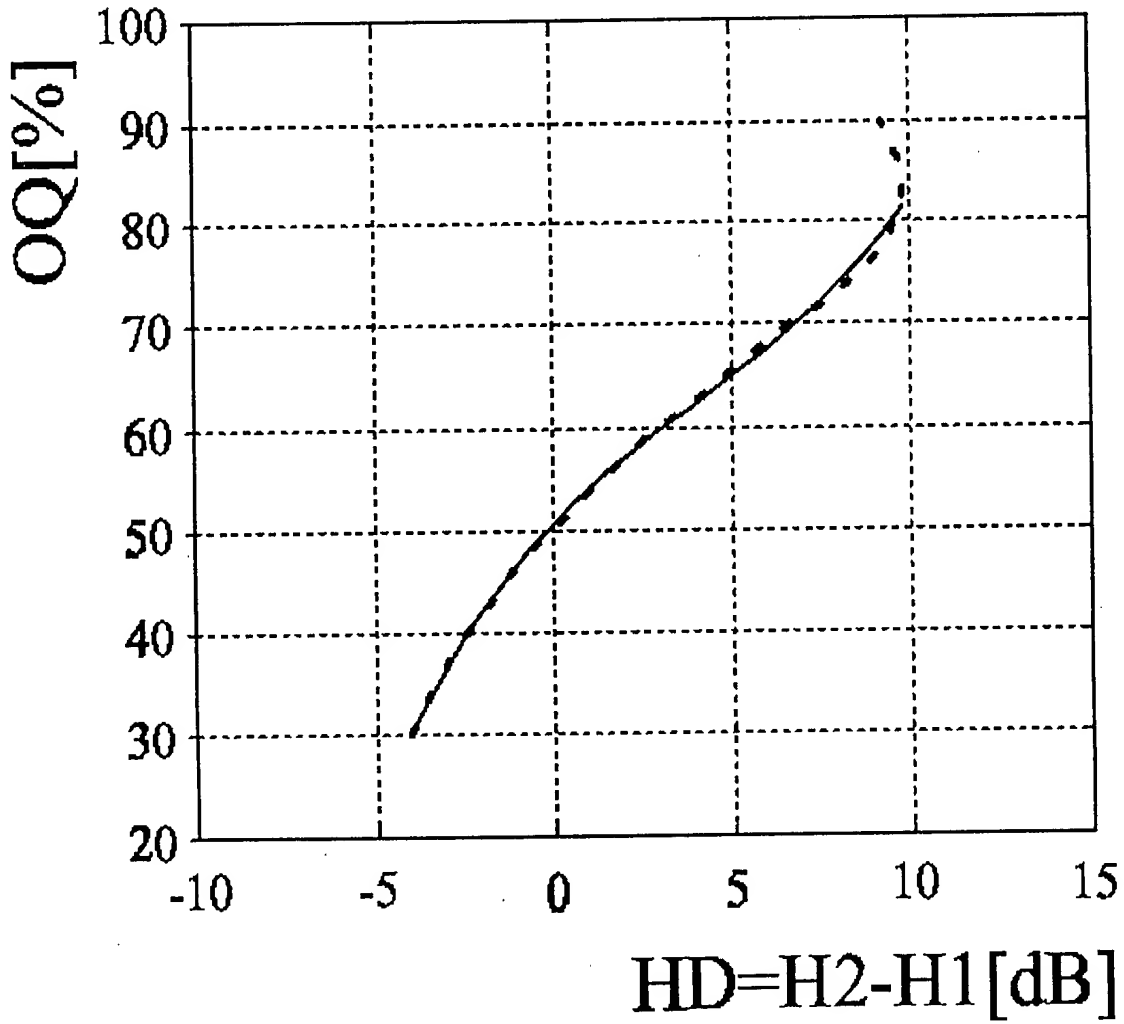

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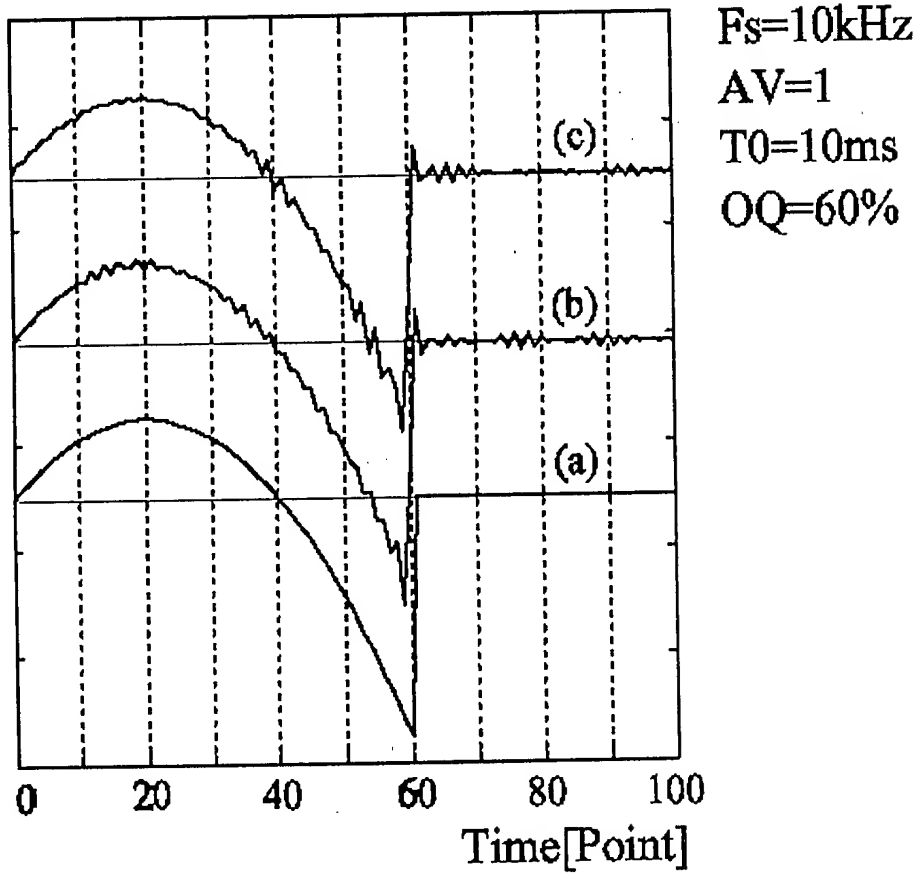
図3



Title: SPEECH ANALYSIS METHOD AND SPEECH SYNTHESIS SYSTEM
Inventor: TAKAHIRO KAMAI
Atty. Ref. No.: 5077-000066

図4

(a)
Frequency[Hz]
5000
4000
3000
2000
1000
0
0
5
10
15
20
25
30
40
Time[ms]
(b)
Frequency[Hz]
5000
4000
3000
2000
1000
0
15
16
17
18
19
20
Time[ms]

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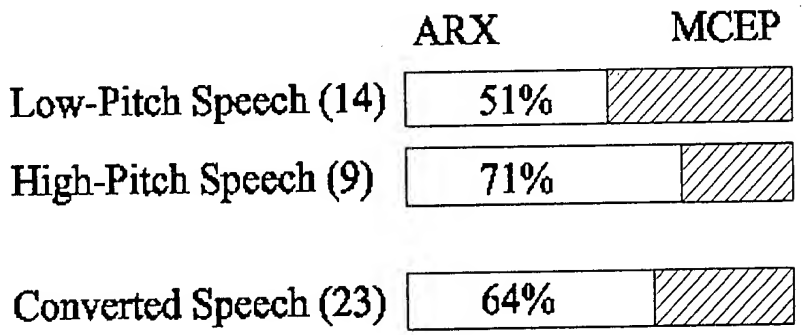
図5



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Inventor: TAKAHIRO KAMAI
Atty. Ref. No.: 5077-000066

図6

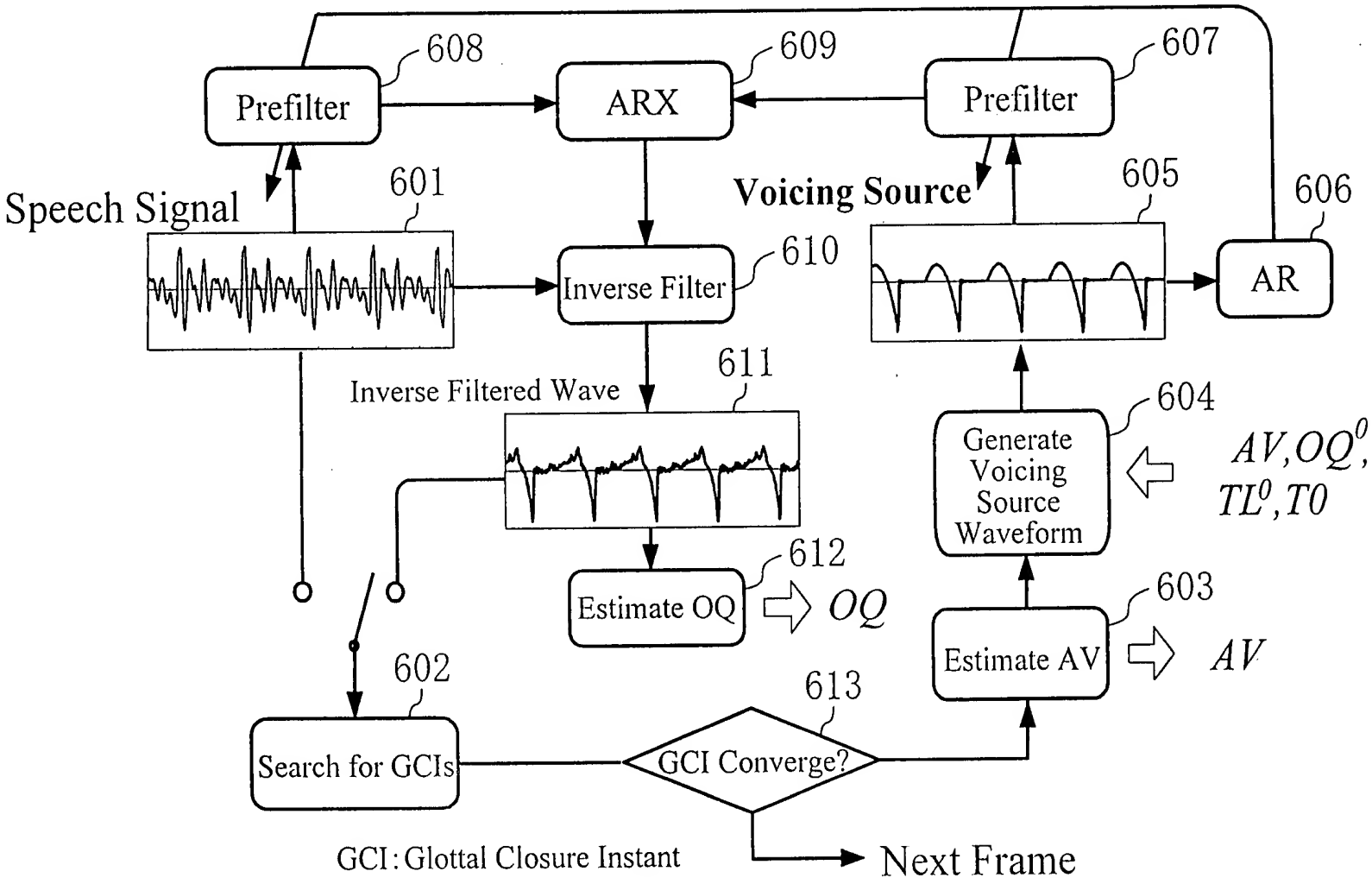

図7

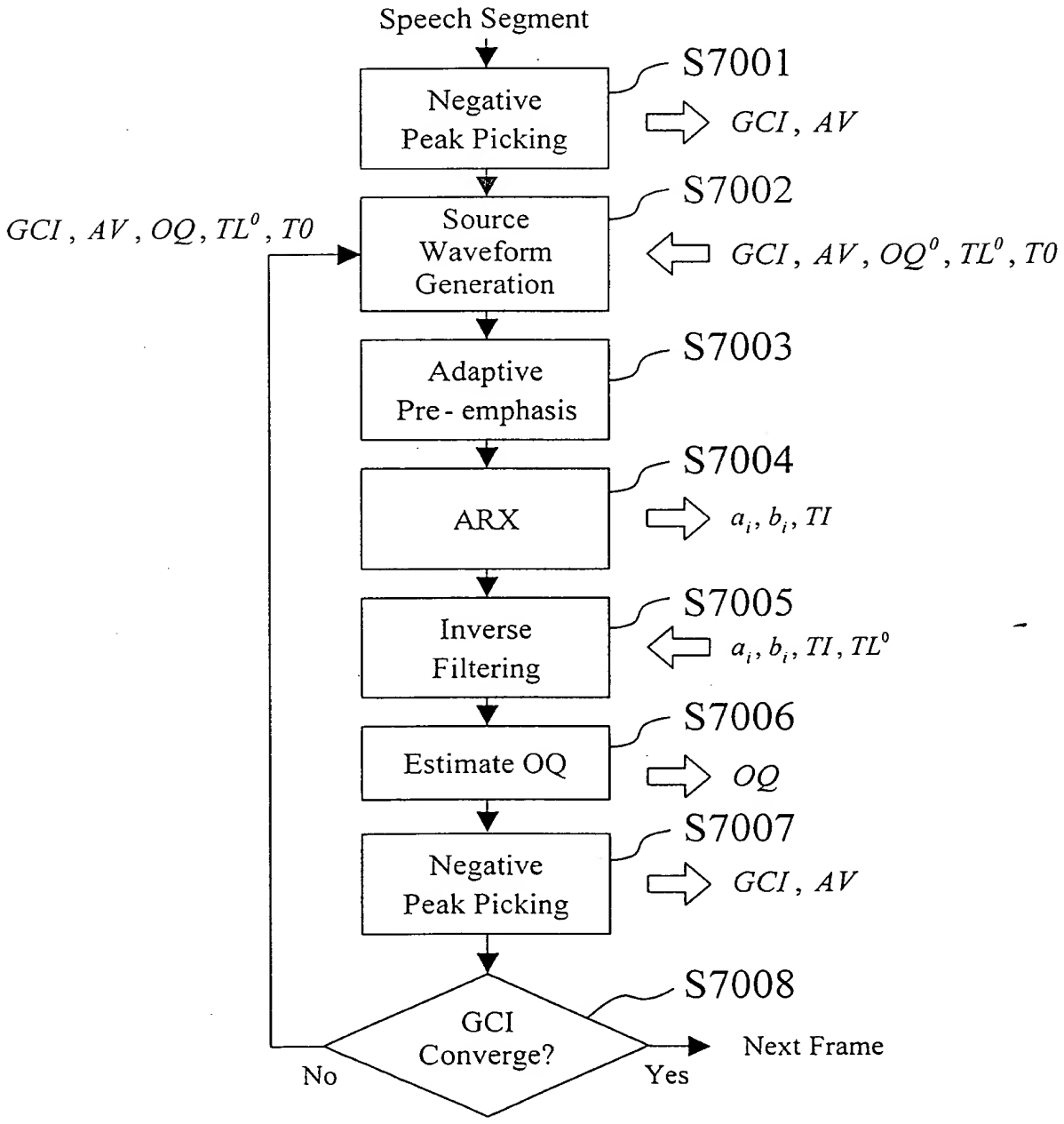

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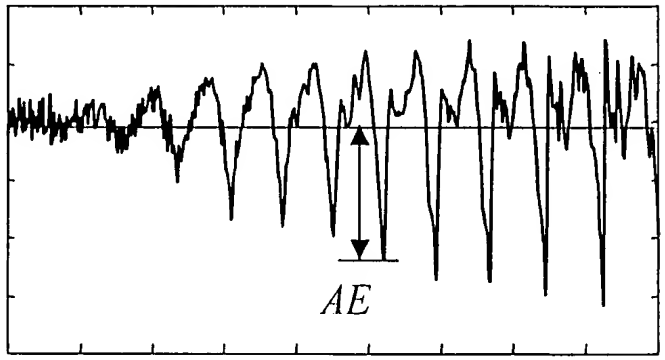
図8

Speech waveform



$$AV = \frac{4}{27} OQ \cdot AE$$

AE : Peak value

RK model waveform

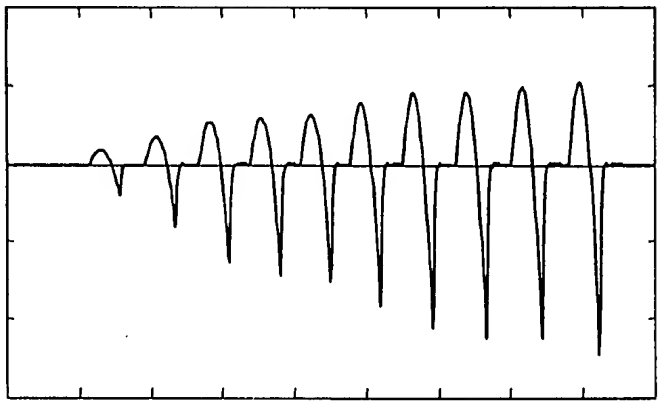


FIG. 9

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図10

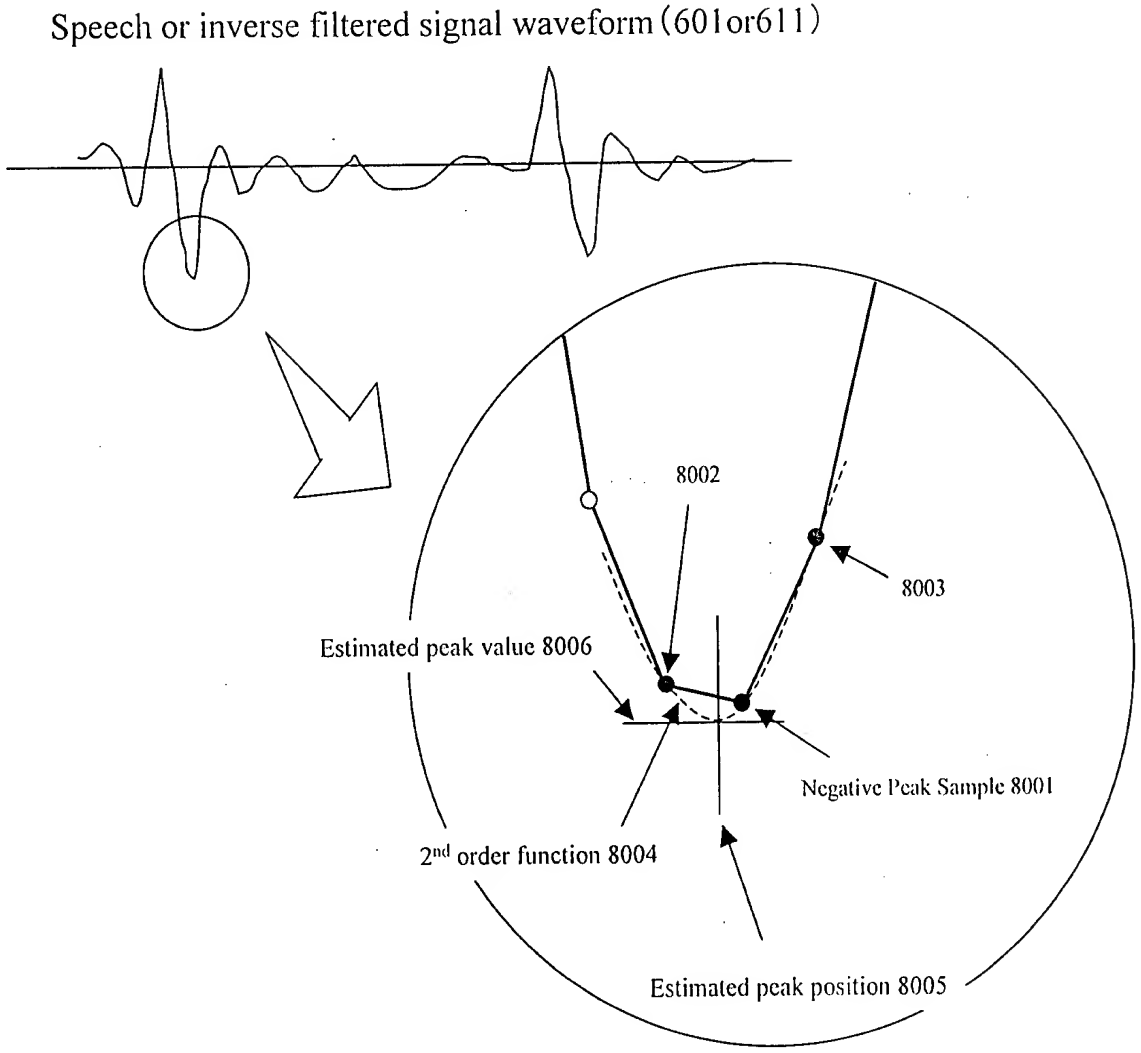
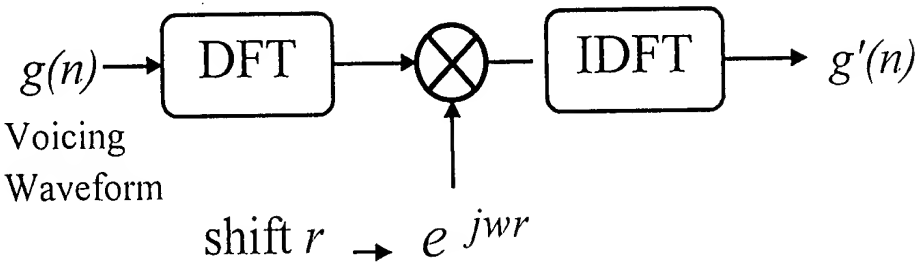
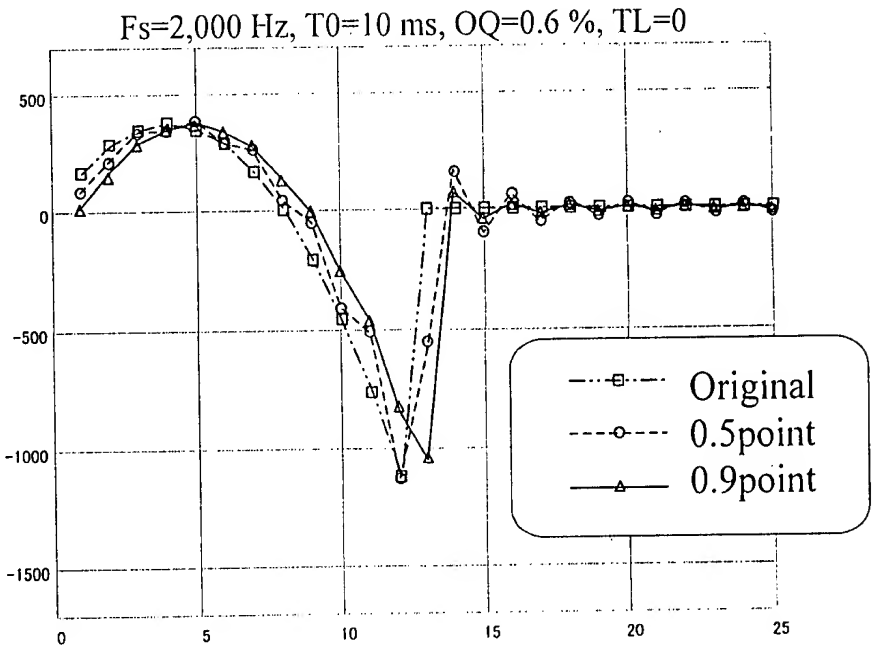

Speech or inverse filtered signal waveform (601or611)
8002
8003
Estimated peak value 8006
Negative Peak Sample 8001
2nd order function 8004
Estimated peak position 8005

図11

(a)


g(n)
DFT
IDFT
g'(n)
Voicing
Waveform
shift r
e jwr

(b)


Fs=2,000 Hz, T0=10 ms, OQ=0.6 %, TL=0
500
0
-500
-1000
-1500
0
5
10
15
20
25
Original
0.5point
0.9point

Title: SPEECH ANALYSIS METHOD AND SPEECH SYNTHESIS SYSTEM
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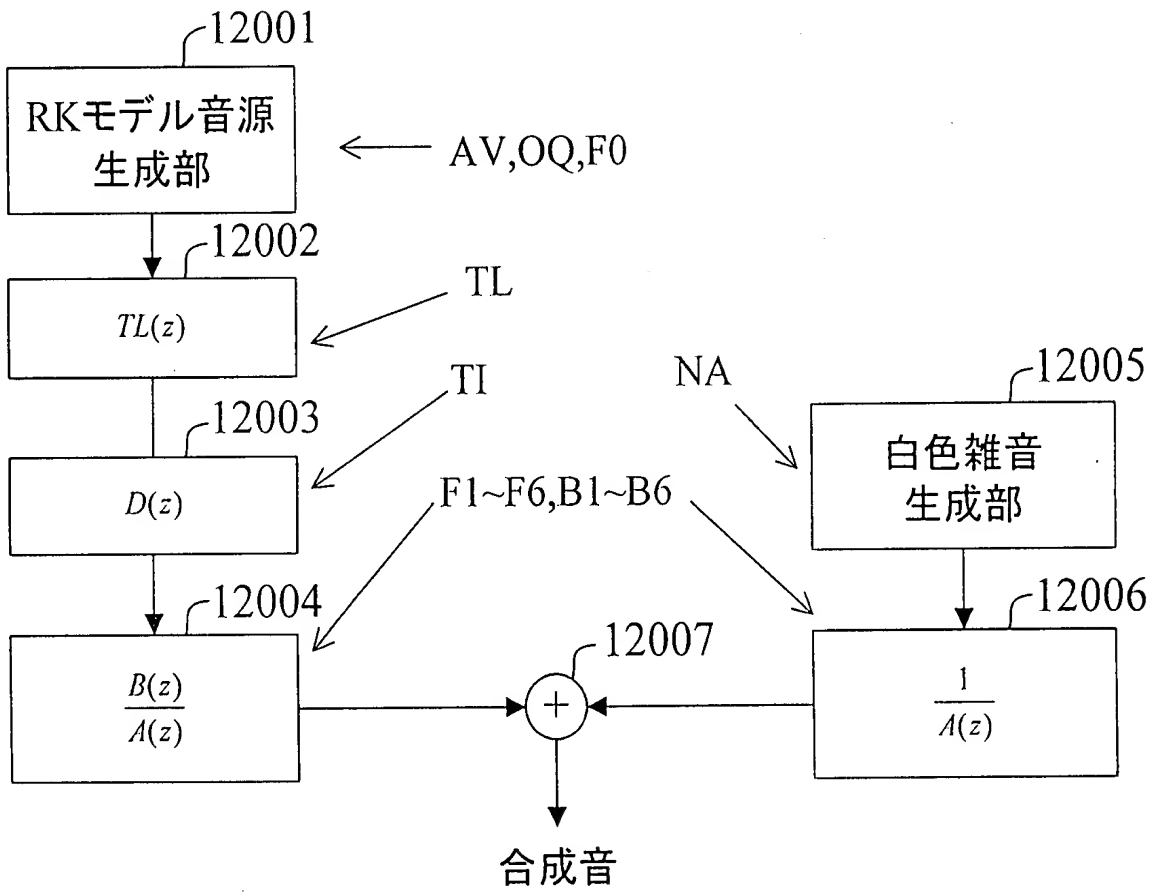
図12



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Inventor: TAKAHIRO KAMAI
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図13

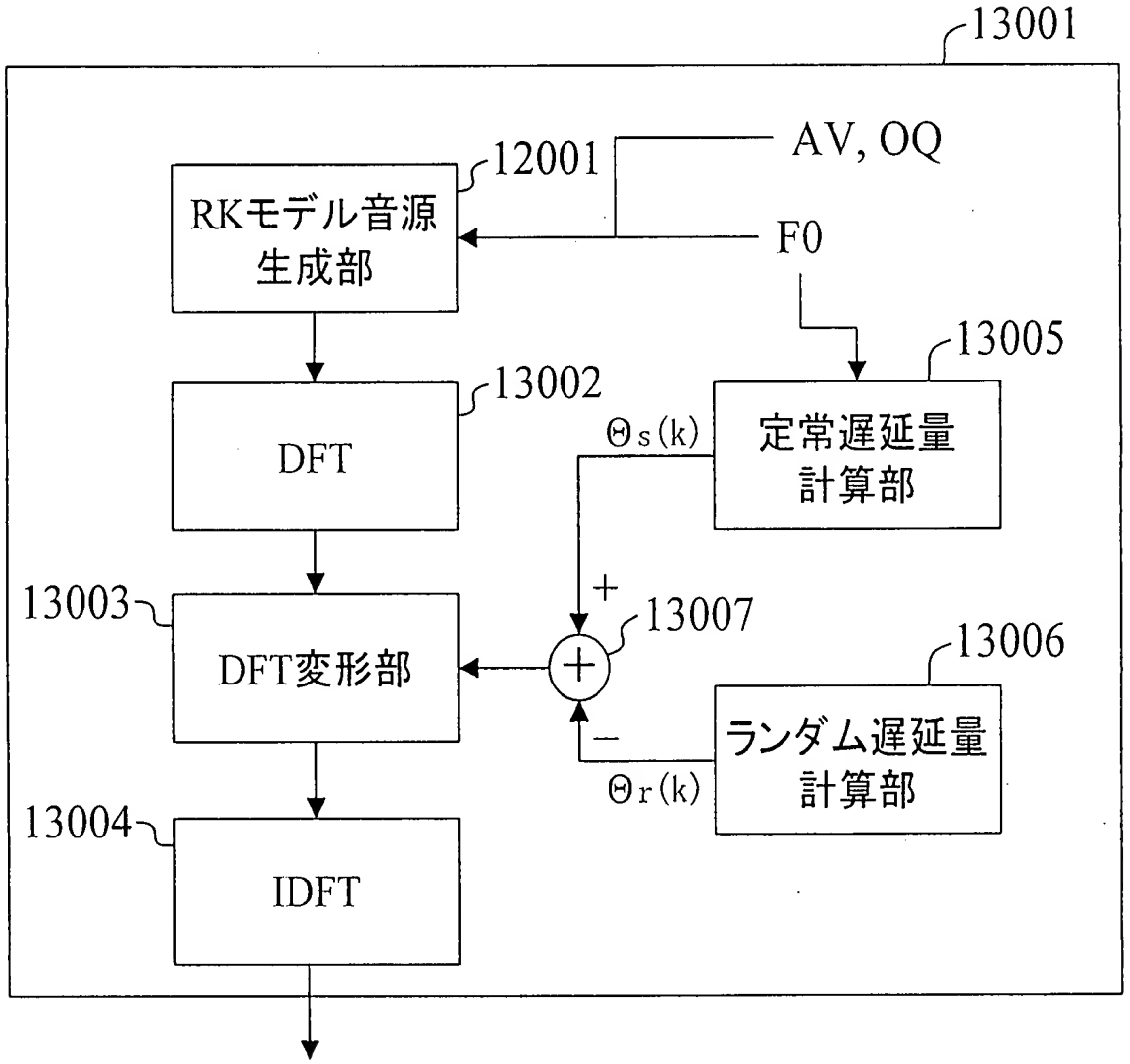
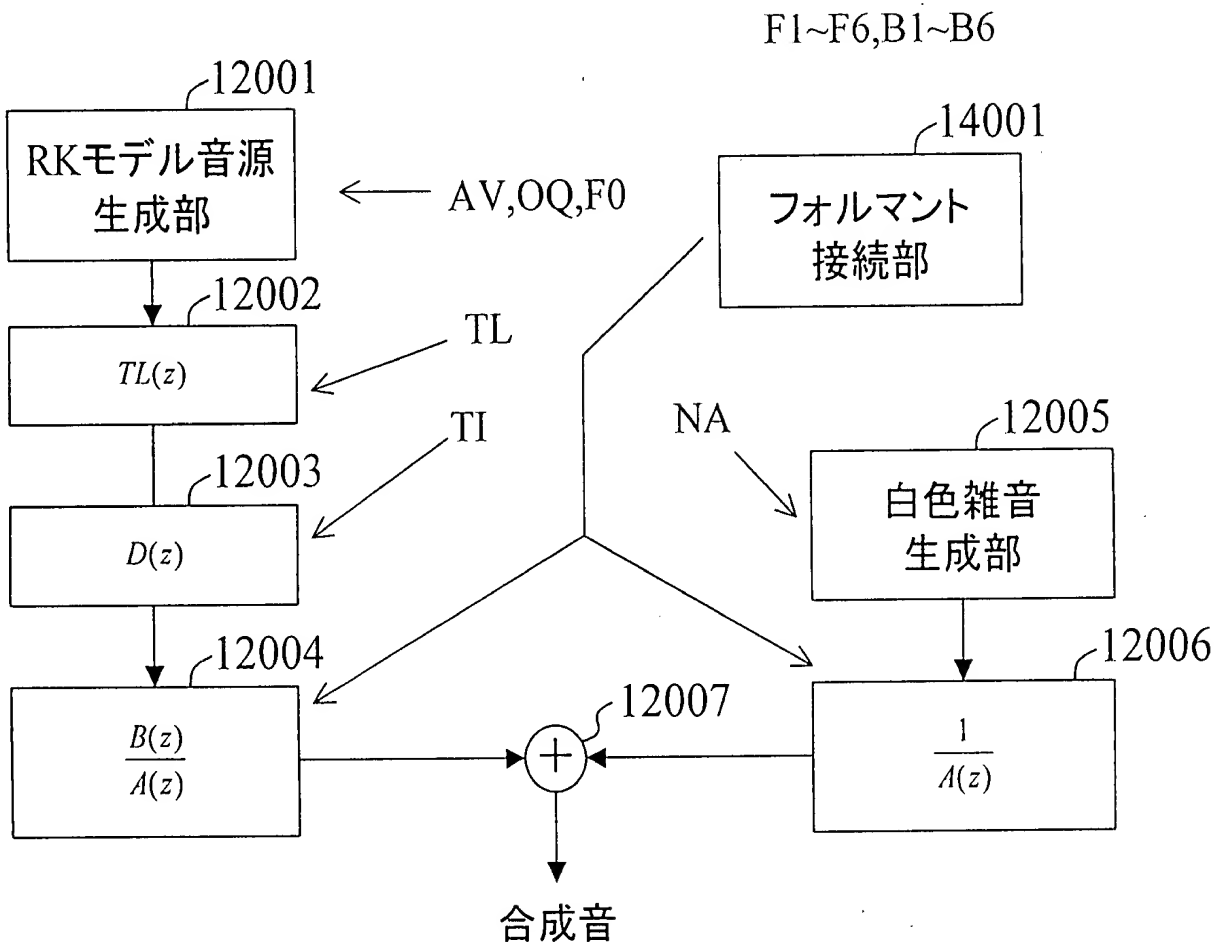


図14



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Inventor: TAKAHIRO KAMAI
Atty. Ref. No.: 5077-000066

図15

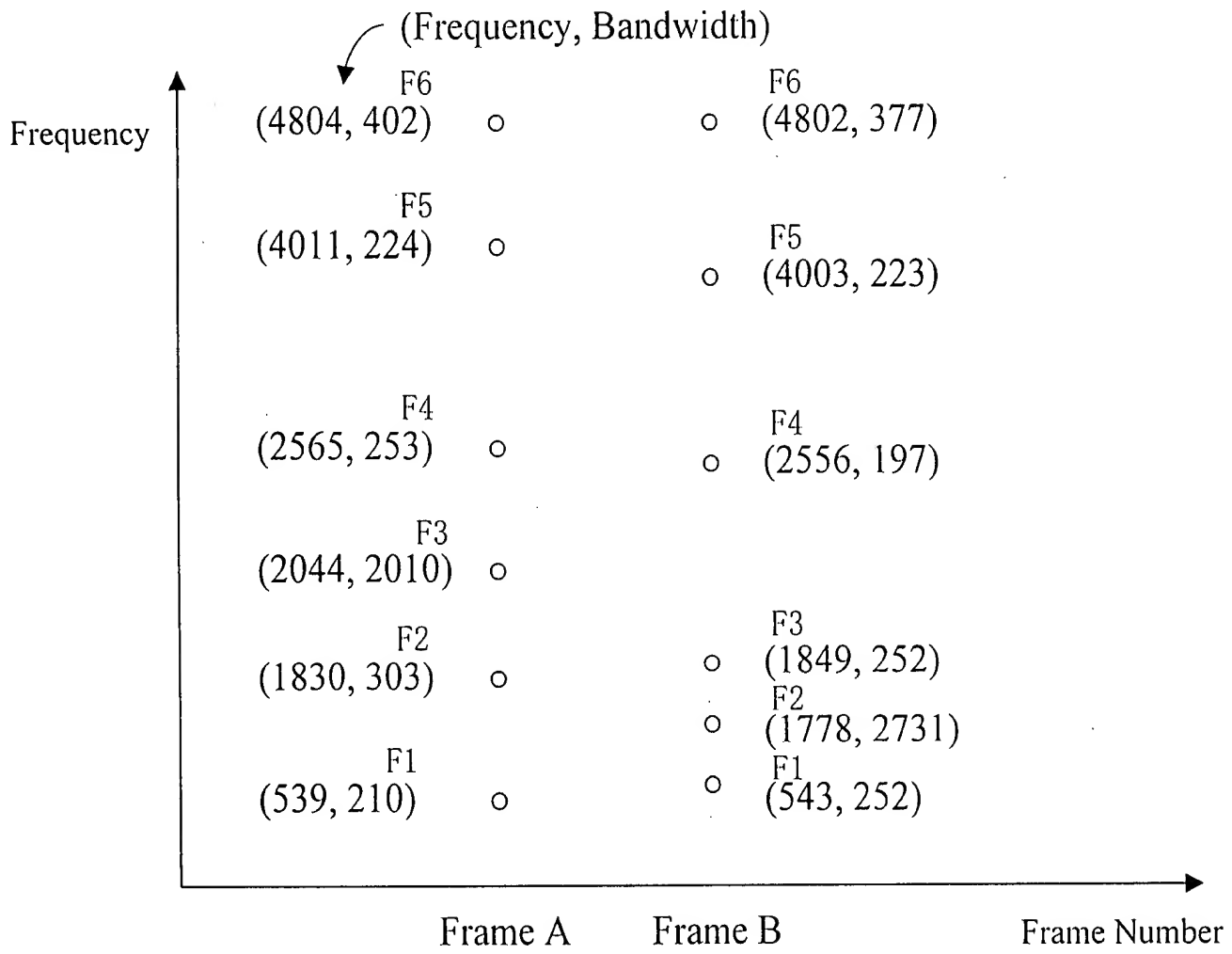
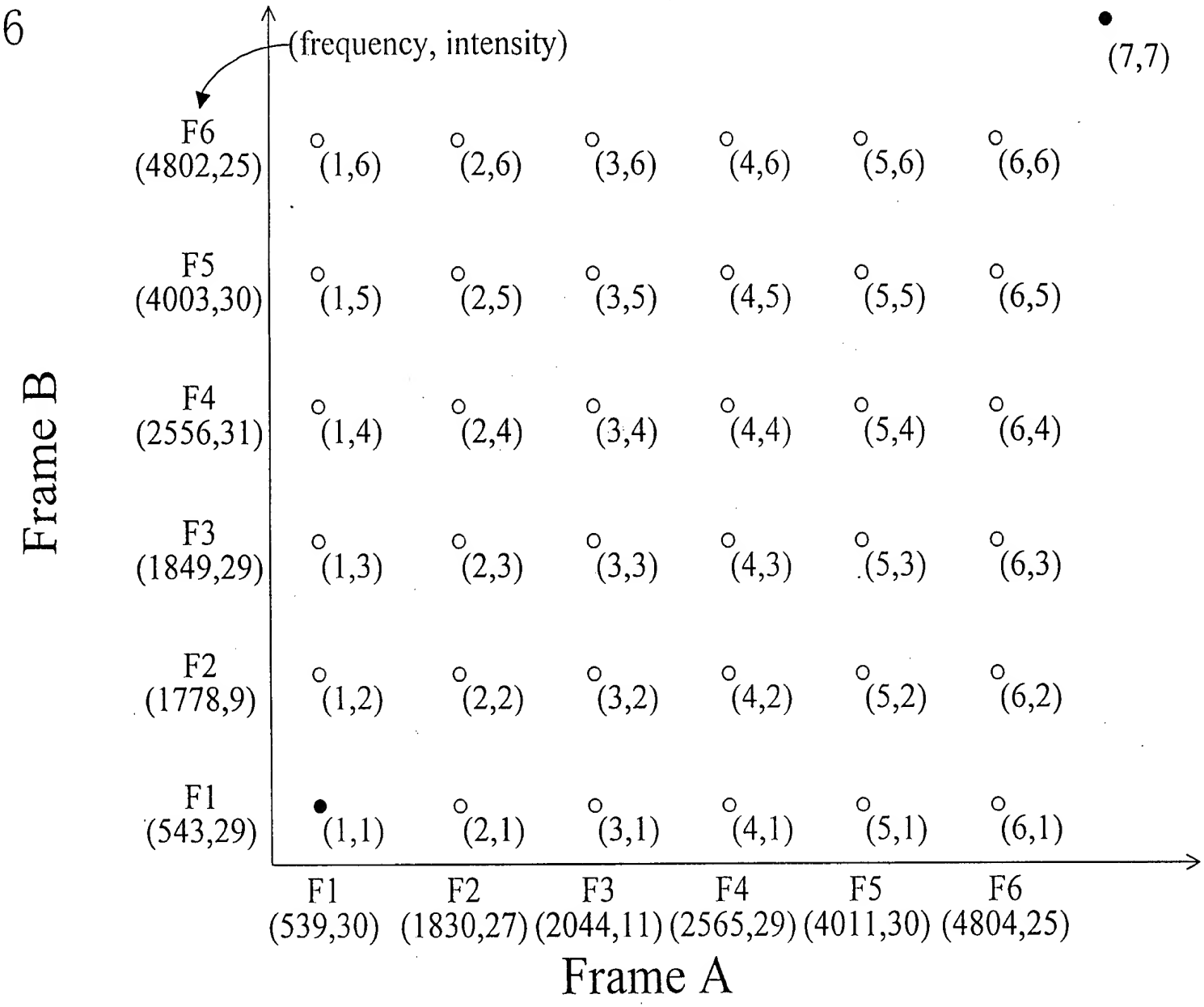

(Frequency, Bandwidth)
Frequency
F6
(4804, 402)
F6
(4802, 377)
F5
(4011, 224)
F5
(4003, 223)
F4
(2565, 253)
F4
(2556, 197)
F3
(2044, 2010)
F3
(1849, 252)
F2
(1830, 303)
F2
(1778, 2731)
F1
(539, 210)
F1
(543, 252)
Frame A
Frame B
Frame Number

図16


(frequency, intensity)
(7,7)
F6
(4802,25)
(1,6)
(2,6)
(3,6)
(4,6)
(5,6)
(6,6)
F5
(4003,30)
(1,5)
(2,5)
(3,5)
(4,5)
(5,5)
(6,5)
F4
(2556,31)
(1,4)
(2,4)
(3,4)
(4,4)
(5,4)
(6,4)
F3
(1849,29)
(1,3)
(2,3)
(3,3)
(4,3)
(5,3)
(6,3)
F2
(1778,9)
(1,2)
(2,2)
(3,2)
(4,2)
(5,2)
(6,2)
F1
(543,29)
(1,1)
(2,1)
(3,1)
(4,1)
(5,1)
(6,1)
Frame B
F1
(539,30)
F2
(1830,27)
F3
(2044,11)
F4
(2565,29)
F5
(4011,30)
F6
(4804,25)
Frame A

Title: SPEECH ANALYSIS METHOD AND SPEECH SYNTHESIS SYSTEM
Inventor: TAKAHIRO KAMAI
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図17

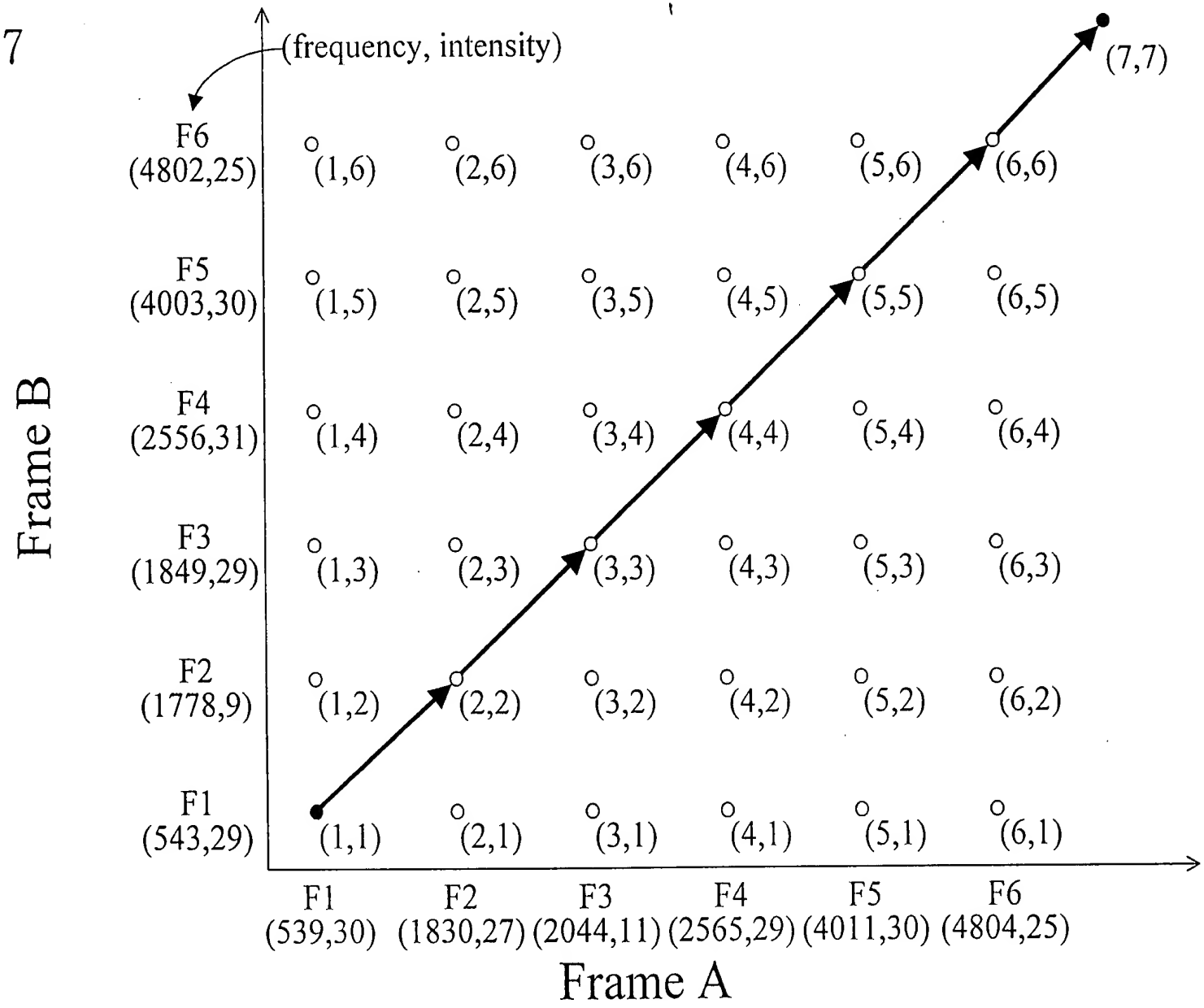

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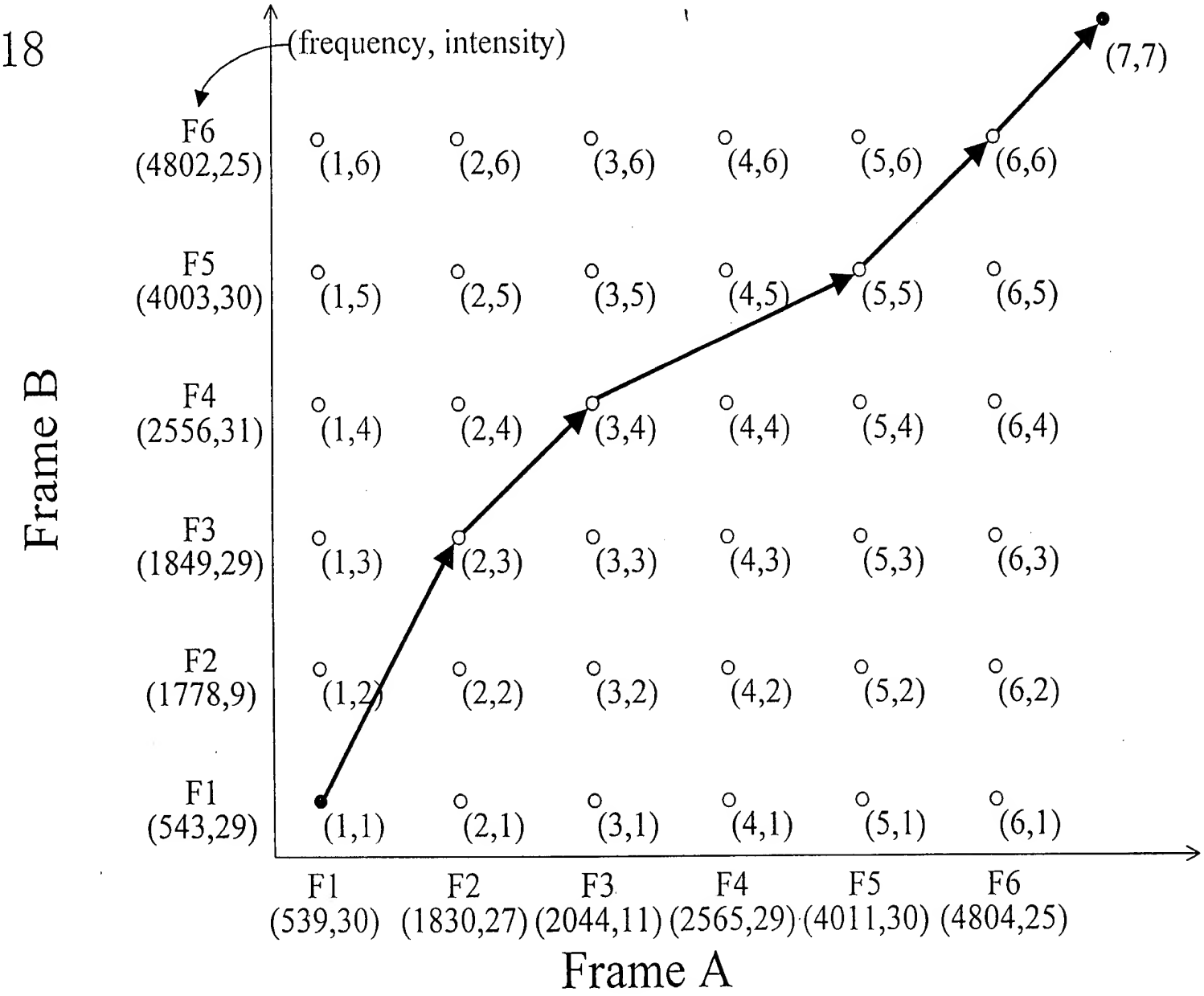
図18



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Inventor: TAKAHIRO KAMAI
Atty. Ref. No.: 5077-000066

図19

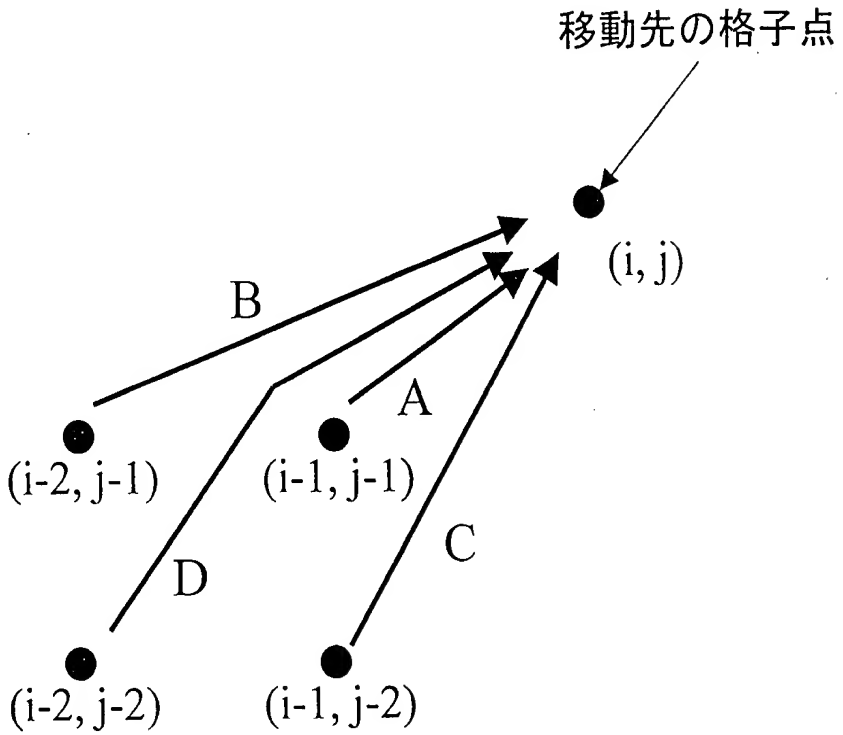
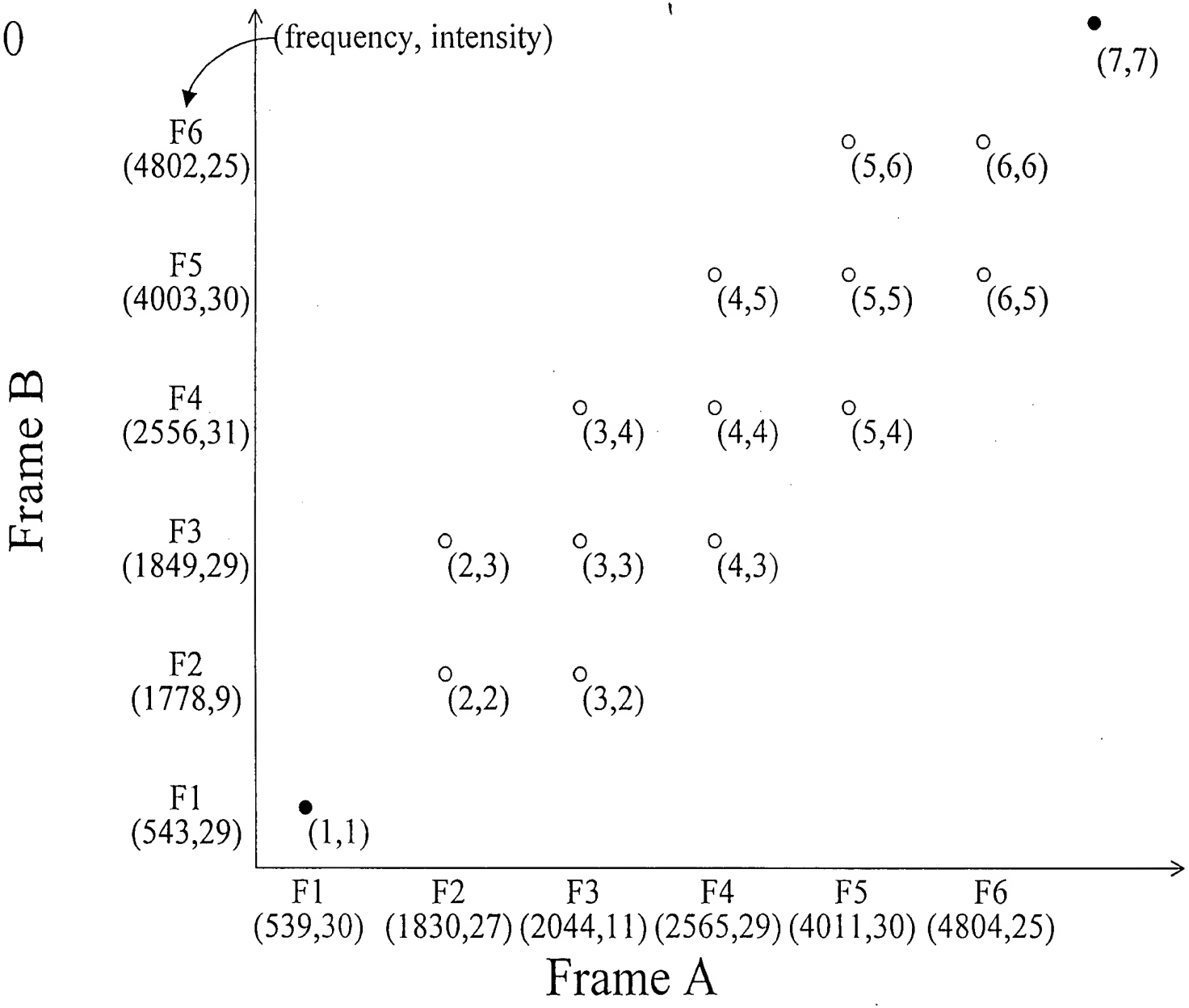


図20


(frequency, intensity)
(7,7)
F6
(4802,25)
F5
(4003,30)
F4
(2556,31)
F3
(1849,29)
F2
(1778,9)
F1
(543,29)
Frame B
(5,6)
(6,6)
(4,5)
(5,5)
(6,5)
(3,4)
(4,4)
(5,4)
(2,3)
(3,3)
(4,3)
(2,2)
(3,2)
(1,1)
F1
(539,30)
F2
(1830,27)
F3
(2044,11)
F4
(2565,29)
F5
(4011,30)
F6
(4804,25)
Frame A

T06T60" 29755660

図21

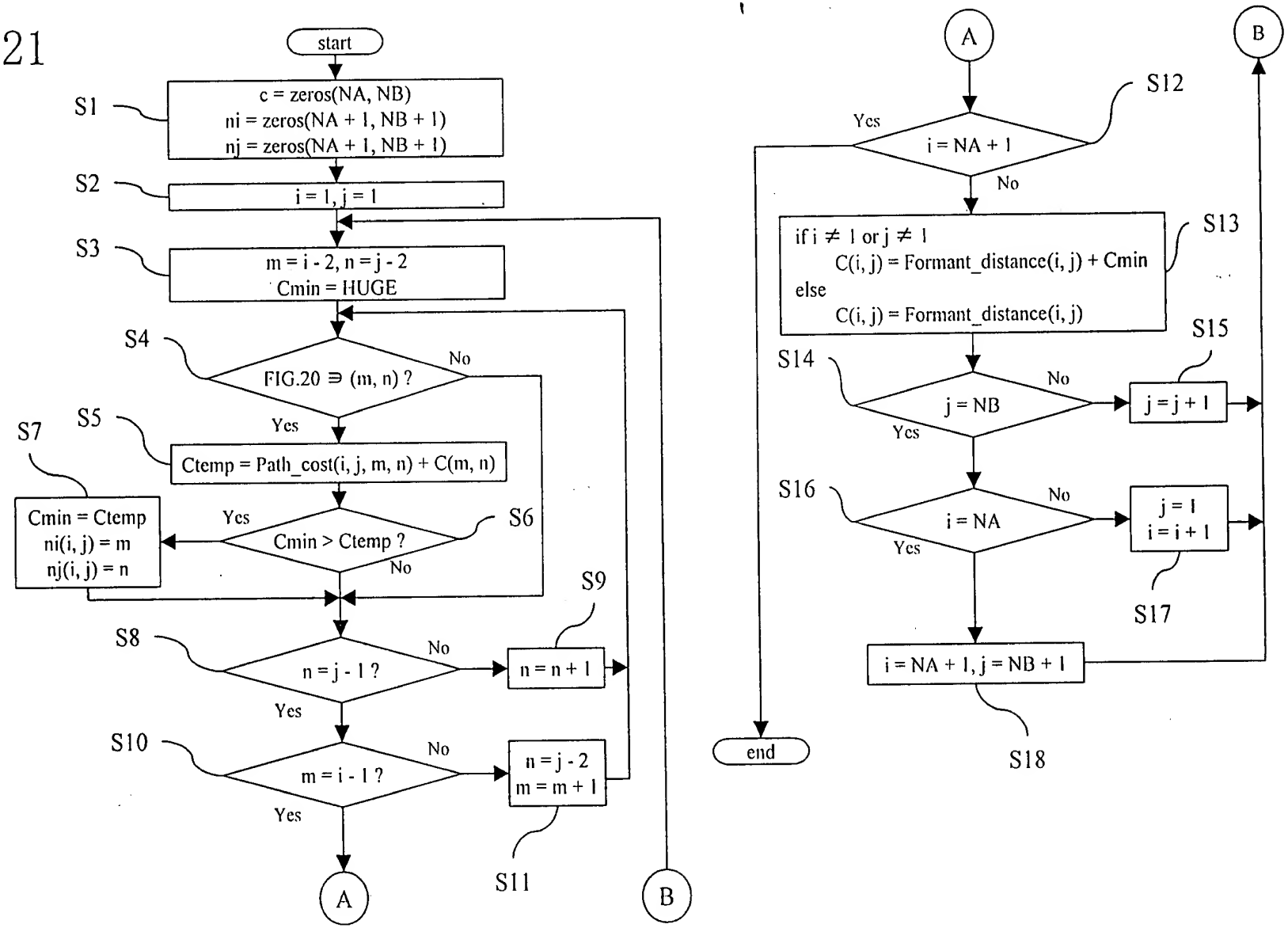
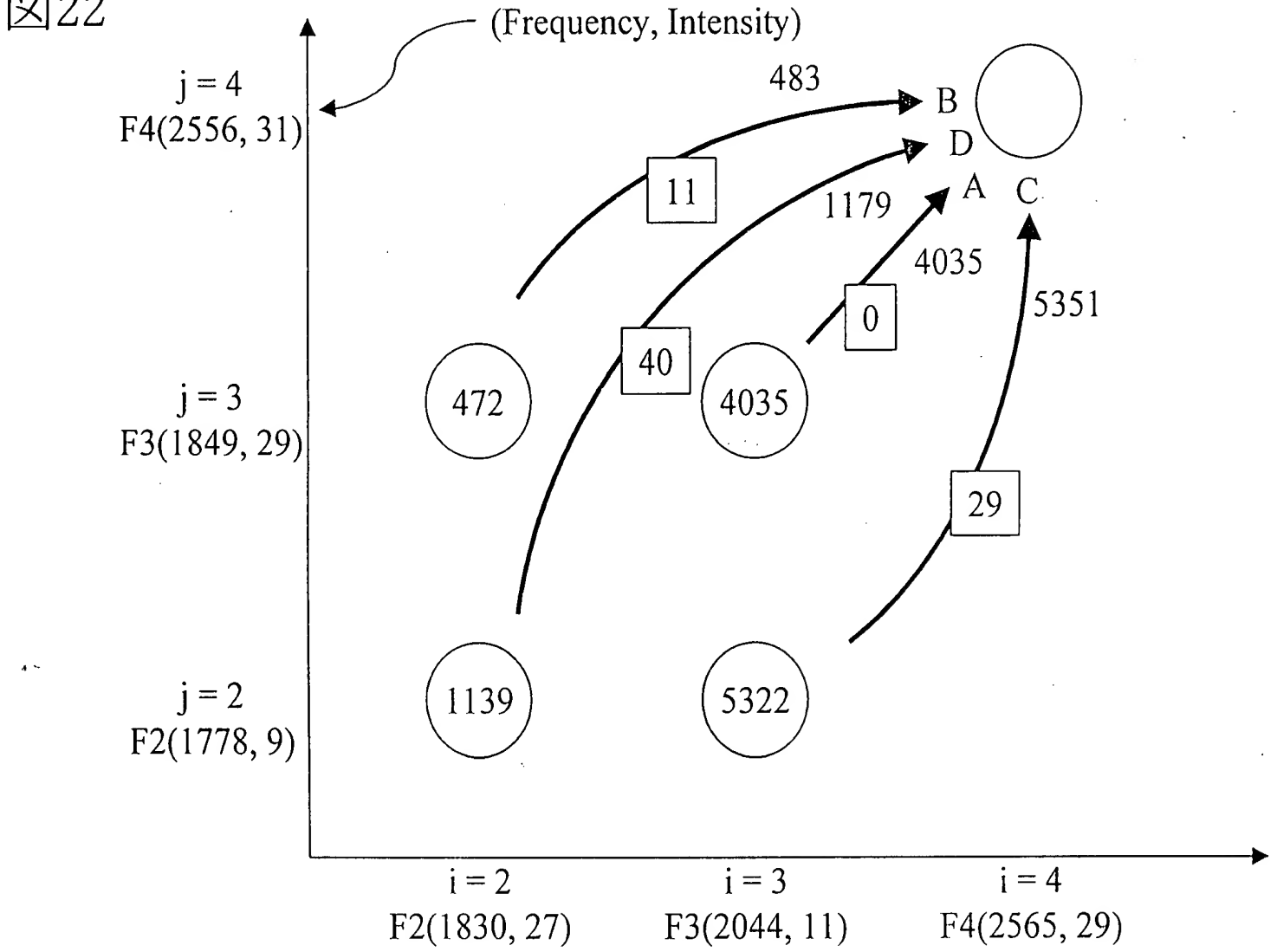


図22


(Frequency, Intensity)
j = 4
F4(2556, 31)
j = 3
F3(1849, 29)
j = 2
F2(1778, 9)
i = 2
F2(1830, 27)
i = 3
F3(2044, 11)
i = 4
F4(2565, 29)
483
11
1179
40
4035
0
5351
29
472
4035
1139
5322
B
D
A
C

TOGT60"Z9Z55660

図23

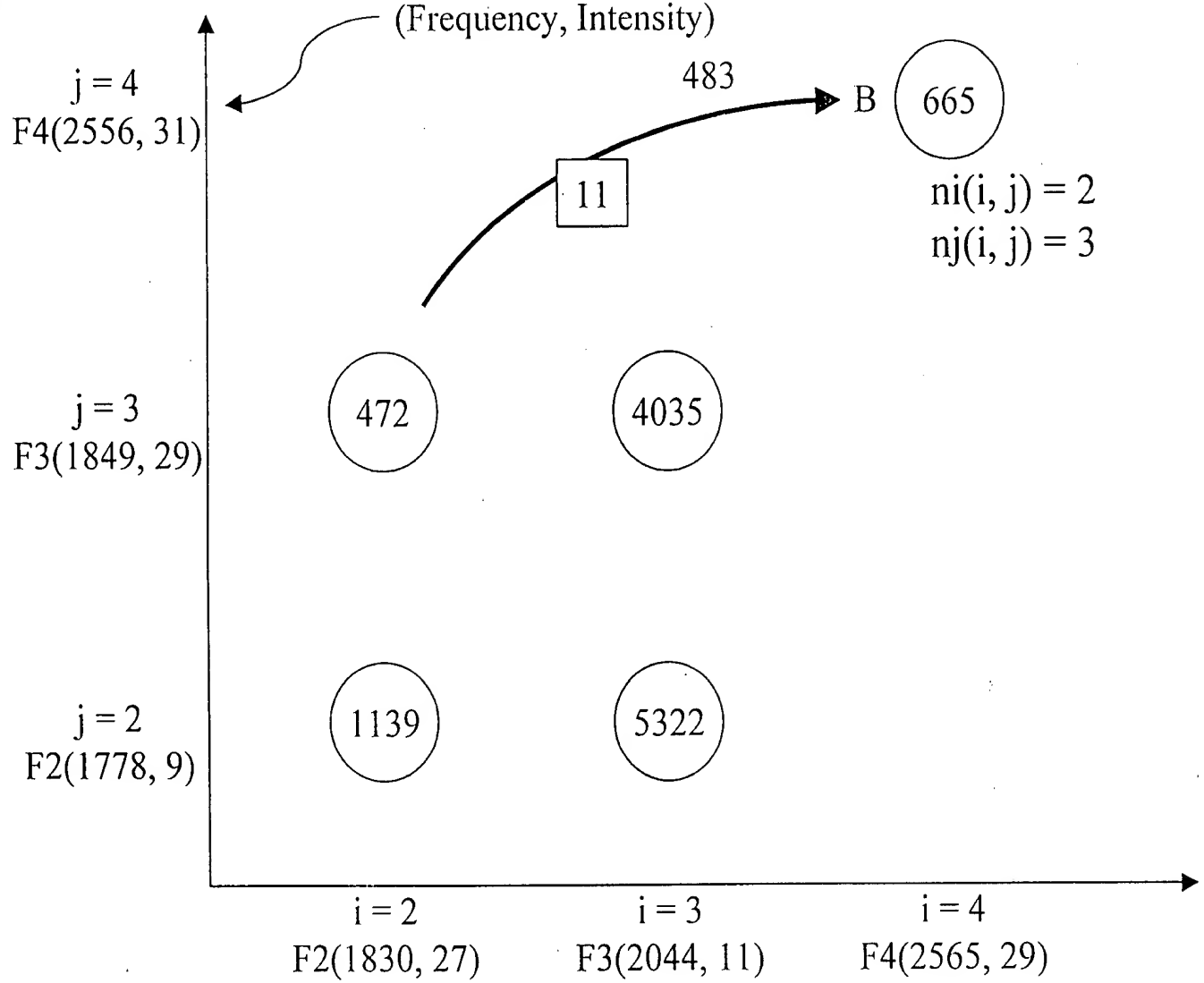


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図24

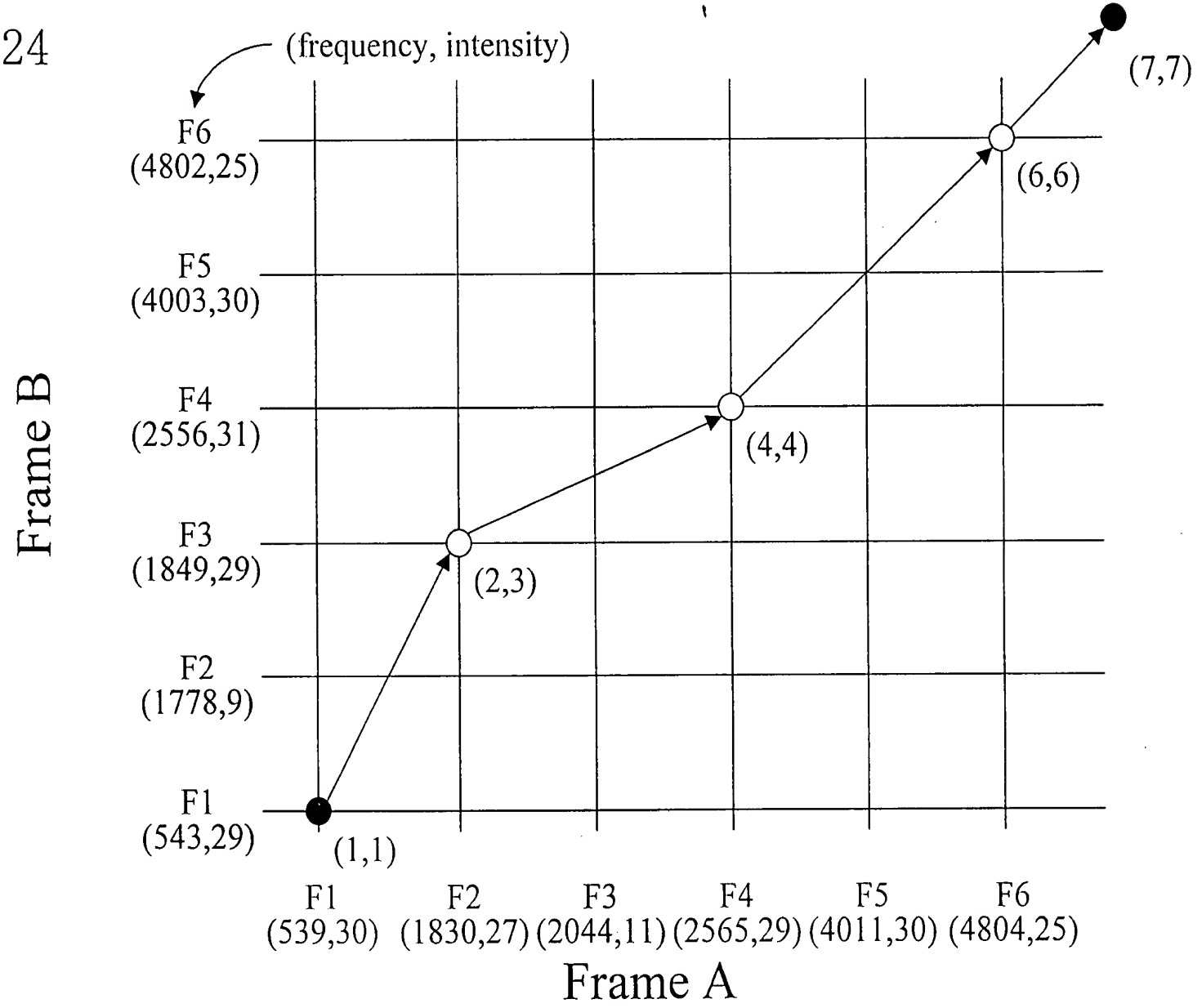


図25

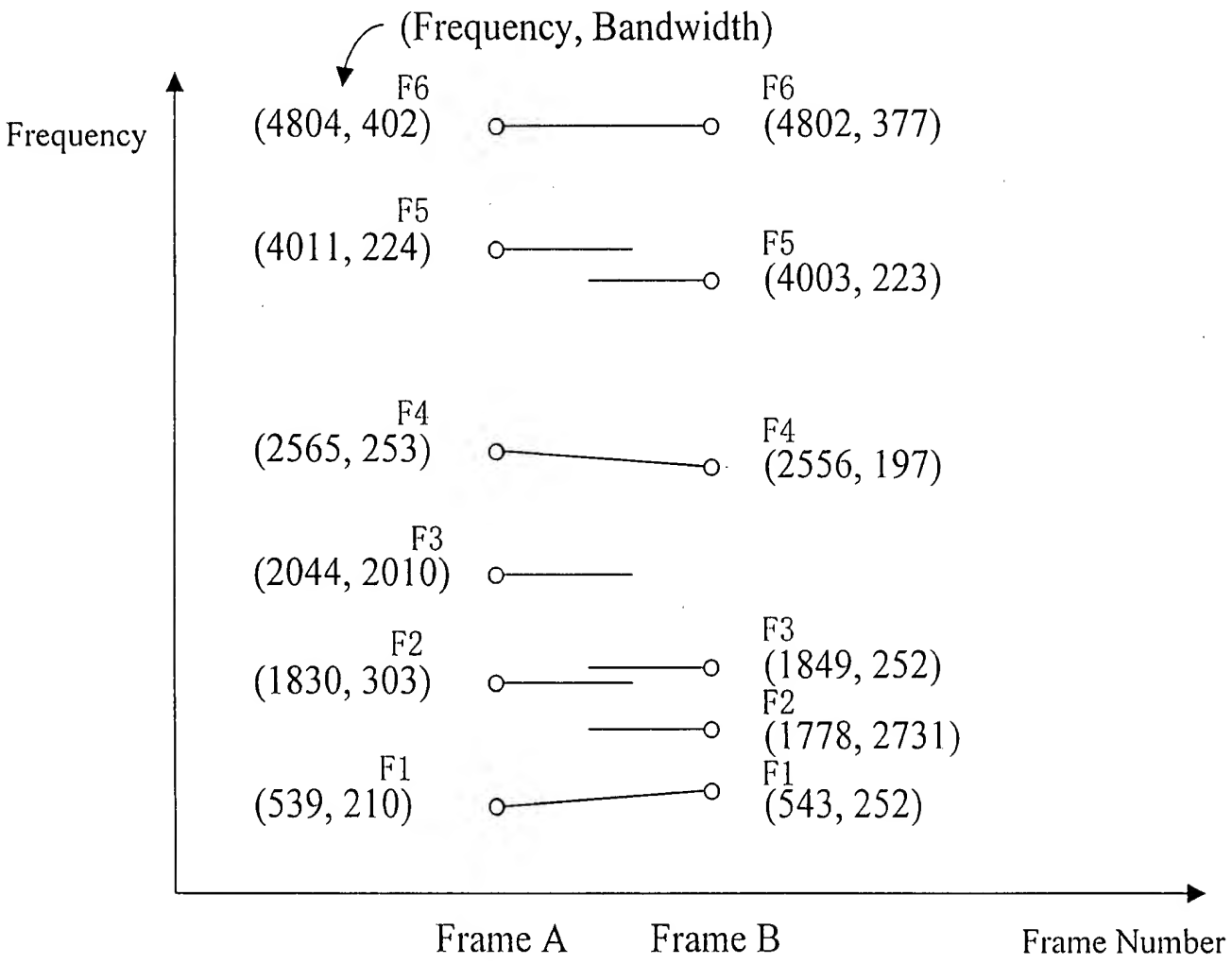

(Frequency, Bandwidth)
Frequency
F6
(4804, 402)
F6
(4802, 377)
F5
(4011, 224)
F5
(4003, 223)
F4
(2565, 253)
F4
(2556, 197)
F3
(2044, 2010)
F2
(1830, 303)
F3
(1849, 252)
F2
(1778, 2731)
F1
(539, 210)
F1
(543, 252)
Frame A
Frame B
Frame Number

図26

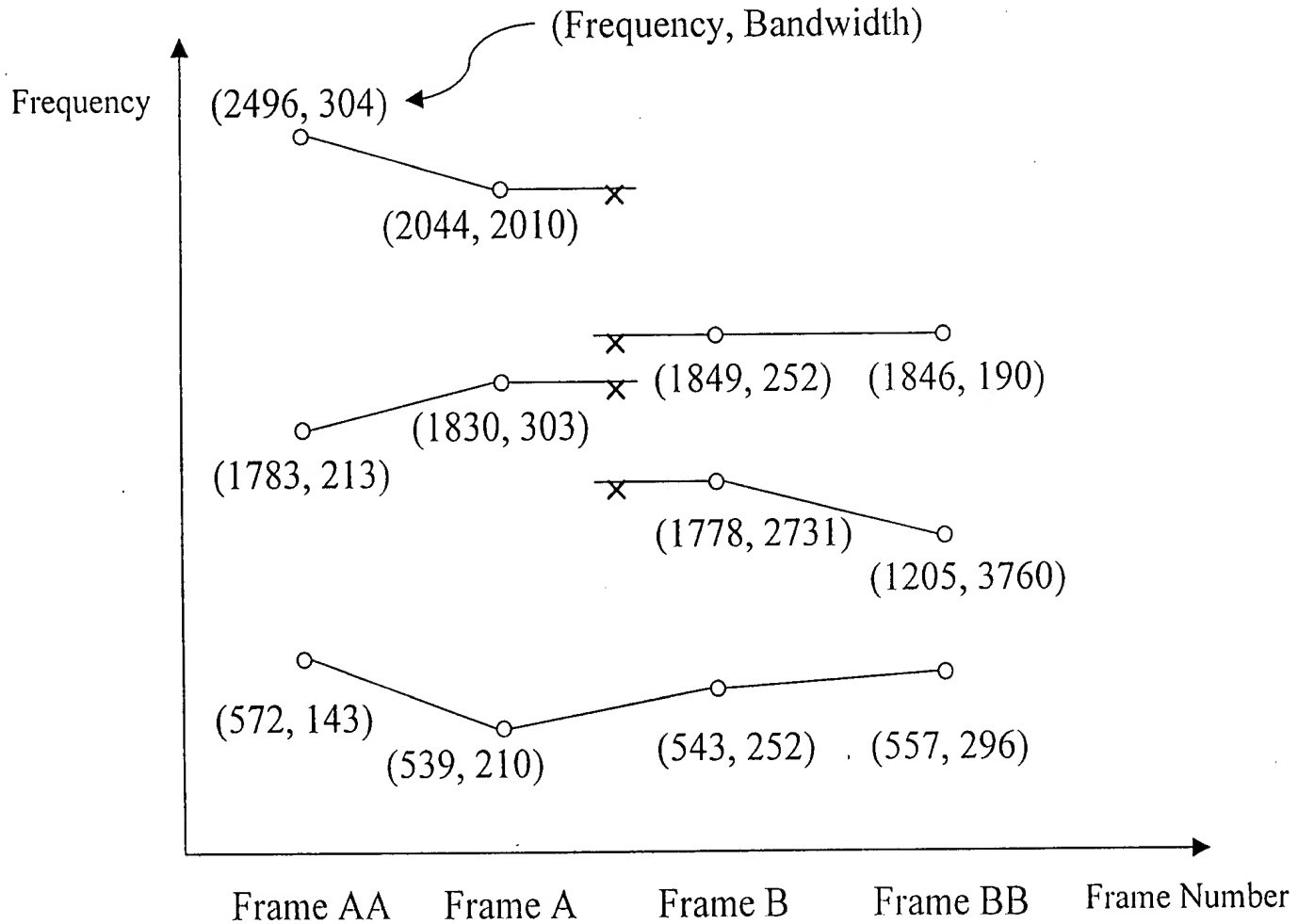
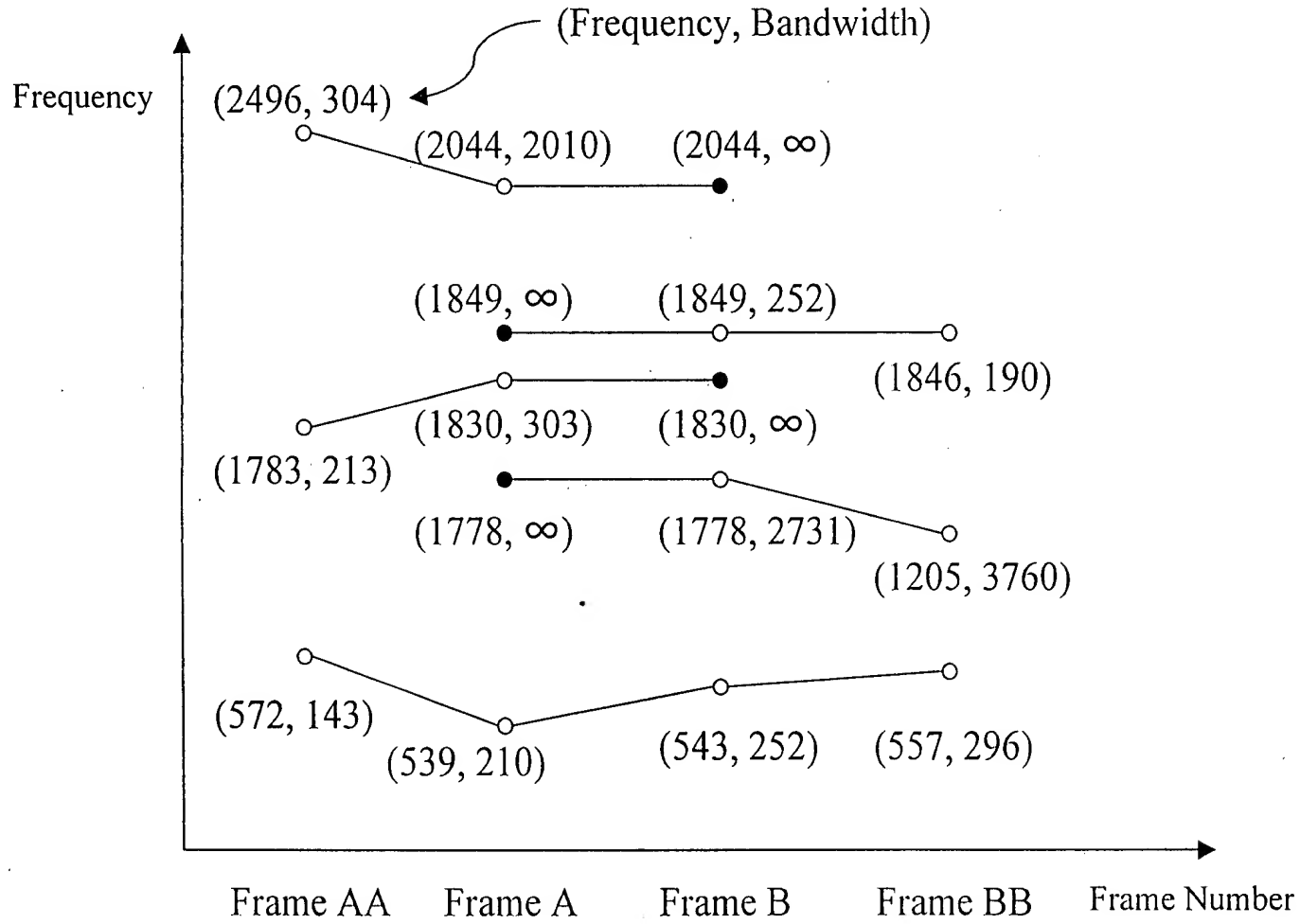

(Frequency, Bandwidth)
Frequency
(2496, 304)
(2044, 2010)
(1849, 252)
(1846, 190)
(1830, 303)
(1783, 213)
(1778, 2731)
(1205, 3760)
(572, 143)
(539, 210)
(543, 252)
(557, 296)
Frame AA
Frame A
Frame B
Frame BB
Frame Number

図27



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Inventor: TAKAHIRO KAMAI
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図28

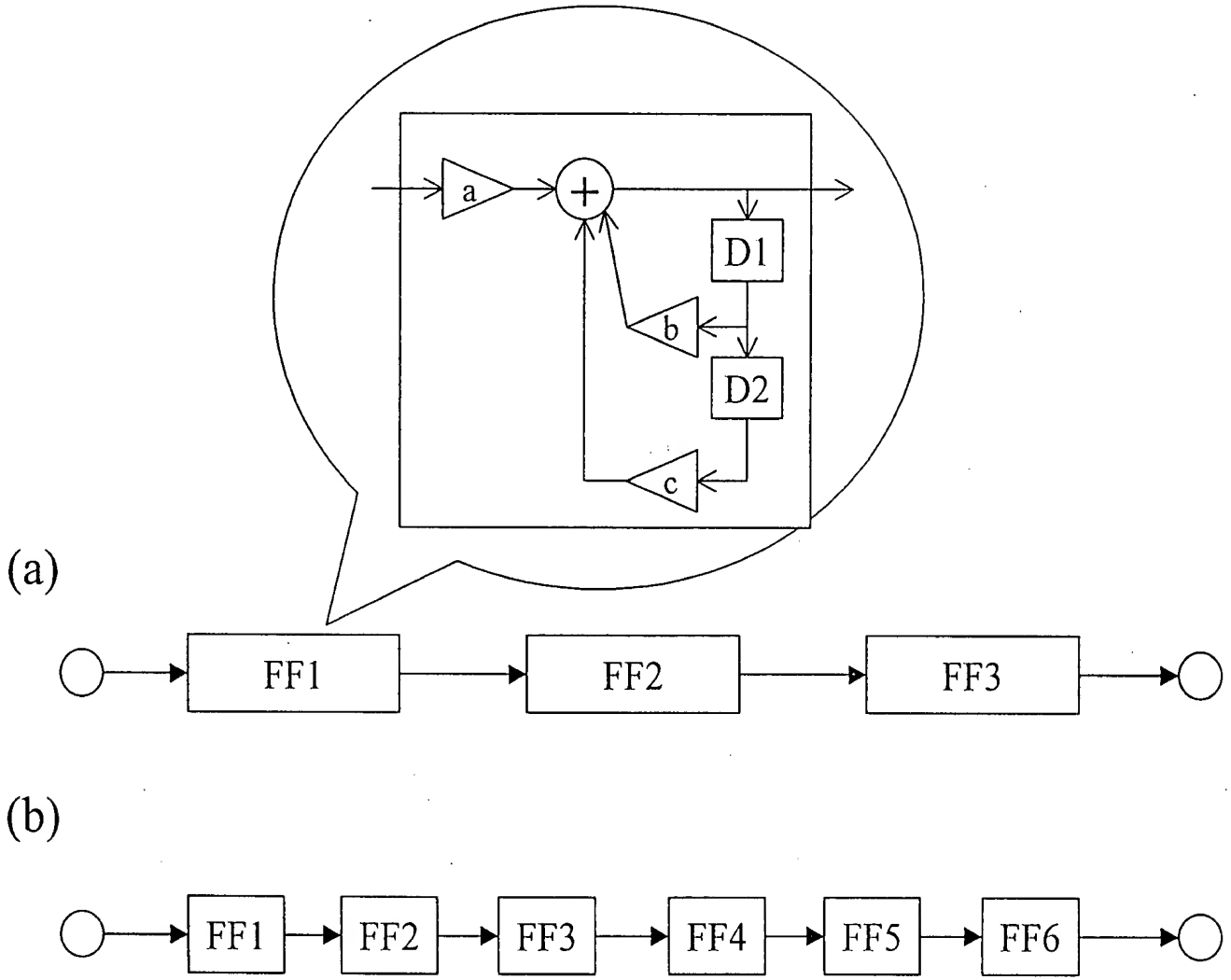

図29

	Frame AA	Frame A	Frame B	Frame BB
FF1	572,143,1	539,210,1	543,252,1	557,296,1
FF2	1783,213,2	1778,∞,0	1778,2731,2	1205,3760,2
FF3	2496,304,3	1830,303,2	1830,∞,3	1846,190,4
FF4	0,0,0	1849,∞,0	1849,252,4	0,0,0
FF5	0,0,0	2044,2010,3	2044,∞,5	0,0,0
FF6	0,0,0	0,0,0	0,0,0	0,0,0

F, B, N

F: frequency
B: band-width
N: previous filter number

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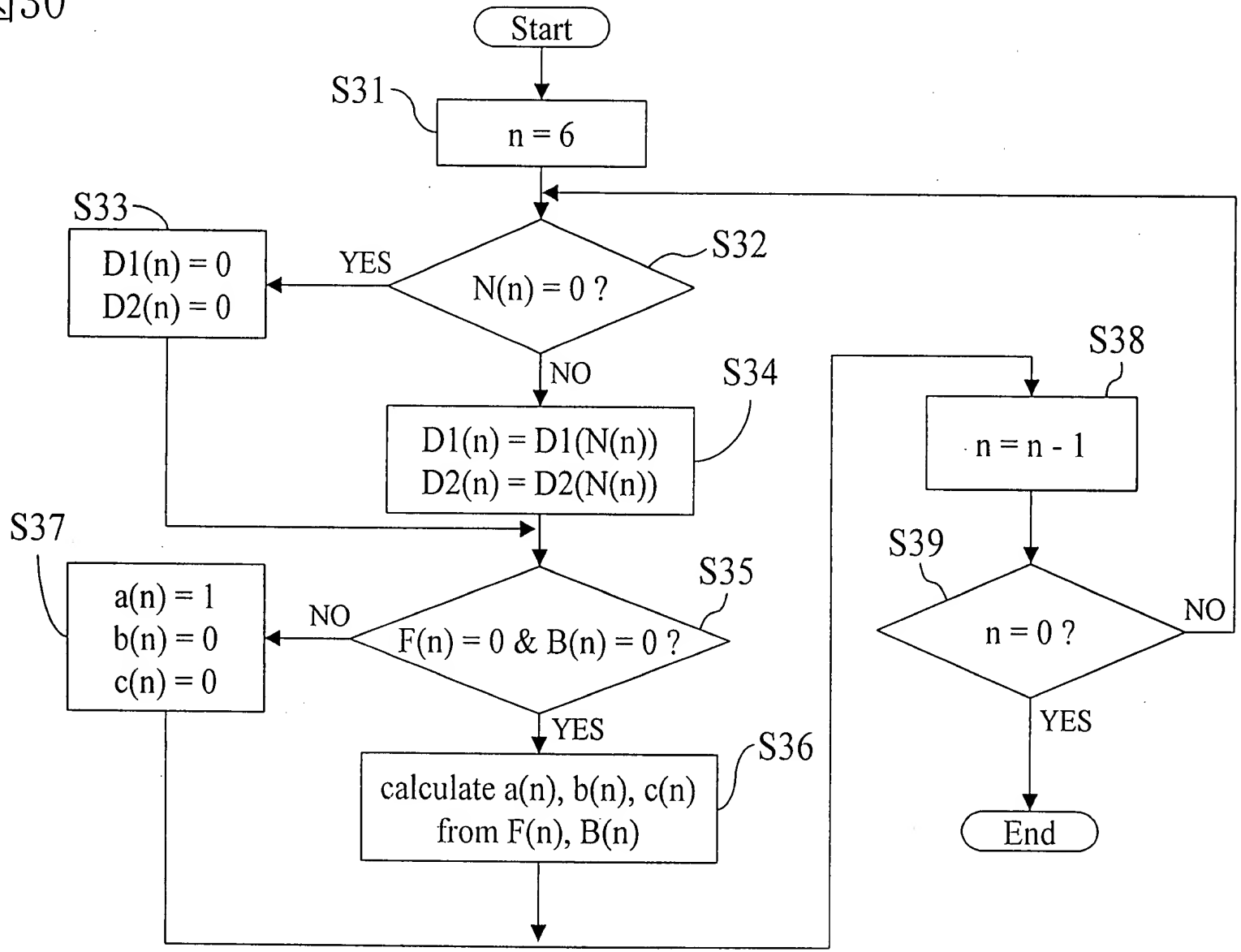
図30